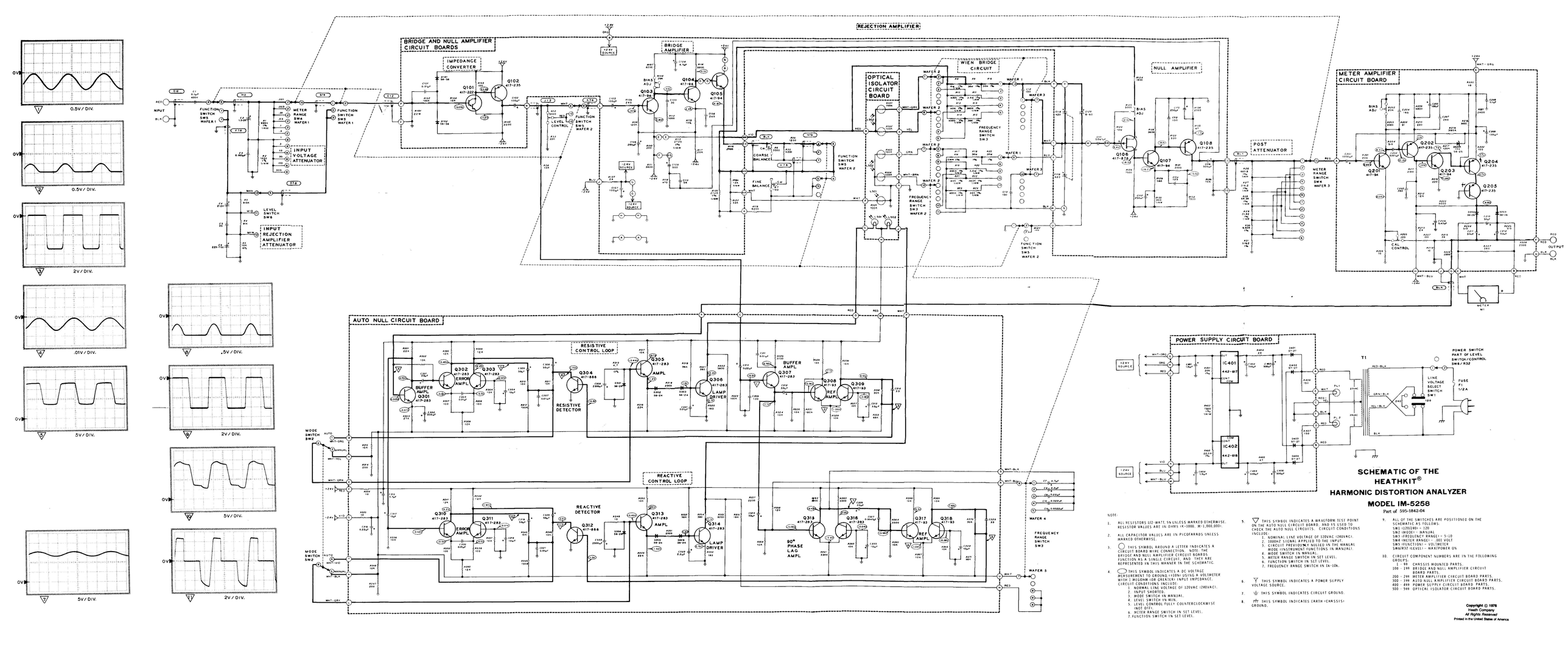


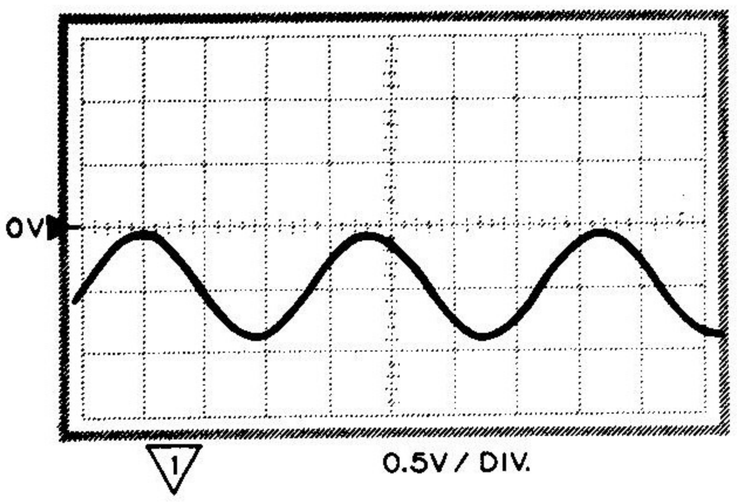
SCHEMATIC OF THE HEATHKIT®
HARMONIC DISTORTION ANALYZER
MODEL IM-5258

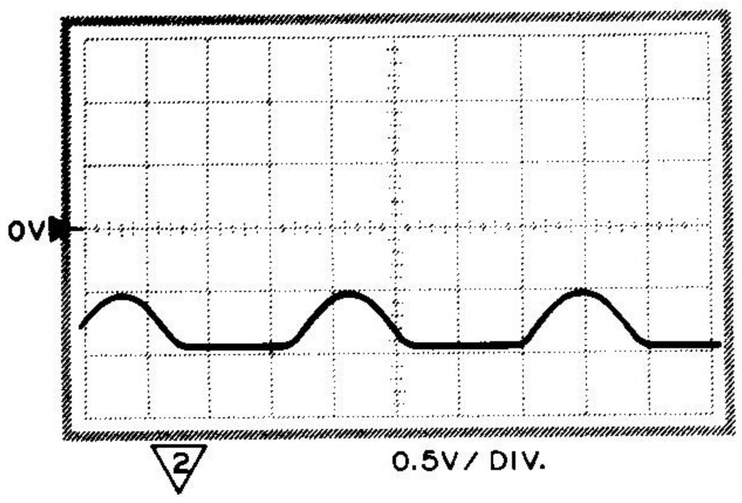
Part of 595-1042-04

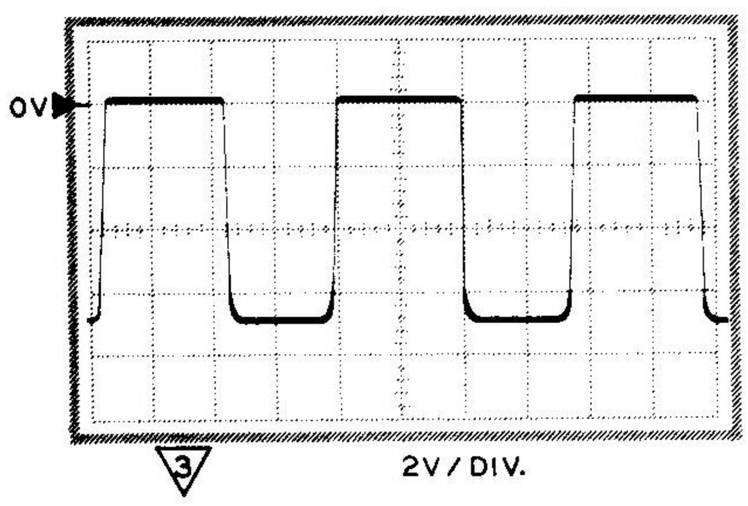
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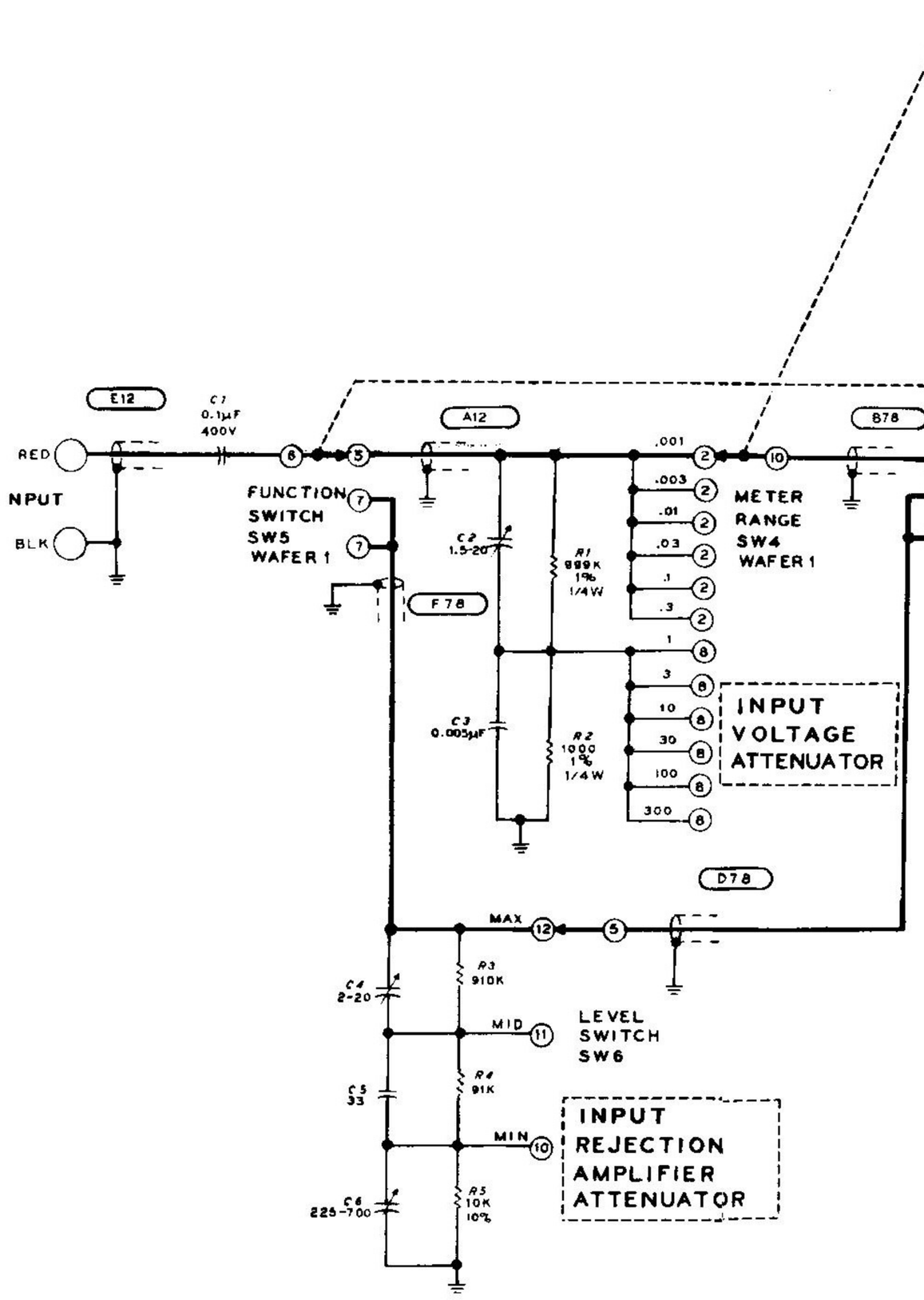
1. ALL RESISTORS 1/2-WATT, 5% UNLESS MARKED OTHERWISE. RESISTOR VALUES ARE IN OHMS: K=1000, M=1,000,000.
2. ALL CAPACITOR VALUES ARE IN PICOFARADS UNLESS MARKED OTHERWISE.
3. ◯ THIS SYMBOL AROUND A LETTER INDICATES A CIRCUIT BOARD WIRE CONNECTION. NOTE: THE BRIDGE AND NULL AMPLIFIER CIRCUIT BOARDS FUNCTION AS A SINGLE CIRCUIT, AND THEY ARE REPRESENTED IN THIS MANNER IN THE SCHEMATIC.
4. ◯ THIS SYMBOL INDICATES A DC VOLTAGE MEASUREMENT TO GROUND (+10%) USING A VOLTMETER WITH 2 MEGOHMS OR GREATER INPUT IMPEDANCE. CIRCUIT CONDITIONS INCLUDE:
   1. NORMAL LINE VOLTAGE OF 120VAC (240VAC).
   2. 1000HZ SIGNAL APPLIED TO INPUT.
   3. MODE SWITCH IN MANUAL.
   4. LEVEL SWITCH IN MIN.
   5. LEVEL CONTROL FULLY COUNTERCLOCKWISE (NOT OFF).
   6. METER RANGE SWITCH IN SET LEVEL.
   7. FUNCTION SWITCH IN SET LEVEL.
5. ▽ THIS SYMBOL INDICATES A WAVEFORM TEST POINT ON THE AUTO NULL CIRCUIT BOARD, AND IS USED TO CHECK THE AUTO NULL CIRCUITS. CIRCUIT CONDITIONS INCLUDE:
   1. NORMAL LINE VOLTAGE OF 120VAC (240VAC).
   2. 1000HZ SIGNAL APPLIED TO INPUT.
   3. CIRCUIT FREQUENCY SET TO 1 kHz (SEE MANUAL).
   4. MODE SWITCH IN MANUAL.
   5. METER RANGE SWITCH IN SET LEVEL.
   6. FUNCTION SWITCH IN SET LEVEL.
   7. FREQUENCY RANGE SWITCH IN 1k-10k.
6. ▽ THIS SYMBOL INDICATES A POWER SUPPLY VOLTAGE SOURCE.
7. ⏚ THIS SYMBOL INDICATES CIRCUIT GROUND.
8. ⏚ THIS SYMBOL INDICATES EARTH (CHASSIS) GROUND.
9. ALL OF THE SWITCHES ARE POSITIONED ON THE SCHEMATIC AS FOLLOWS:
   SW1 (LOCATOR) - 120
   SW2 (MODE) - MANUAL
   SW3 (FREQUENCY RANGE) - 1-10
   SW4 (METER RANGE) - .001 VOLT
   SW5 (FUNCTION) - VOLTMETER
   SW6/R37 (LEVEL) - MAX/POWER ON
10. CIRCUIT COMPONENT NUMBERS ARE IN THE FOLLOWING GROUPS:
    1 - 99 CHASSIS MOUNTED PARTS.
    100 - 199 BRIDGE AND NULL AMPLIFIER CIRCUIT BOARD PARTS.
    200 - 299 METER AMPLIFIER CIRCUIT BOARD PARTS.
    300 - 399 AUTO NULL AMPLIFIER CIRCUIT BOARD PARTS.
    400 - 499 POWER SUPPLY CIRCUIT BOARD PARTS.
    500 - 599 OPTICAL ISOLATOR CIRCUIT BOARD PARTS.

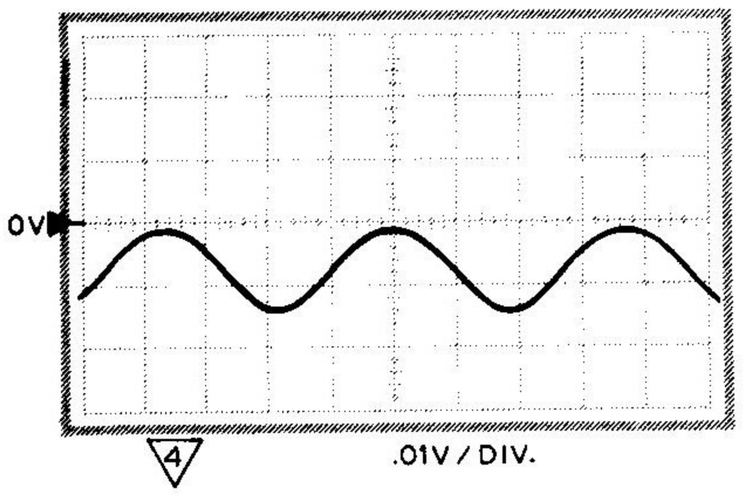
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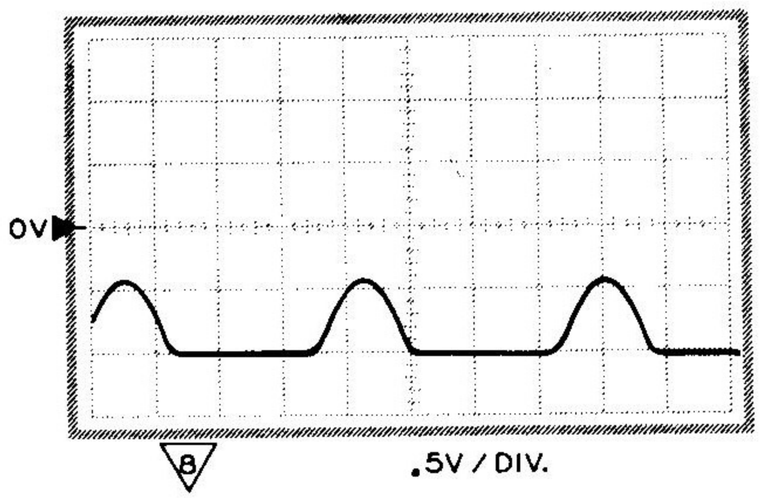

0V
1
0.5V / DIV.

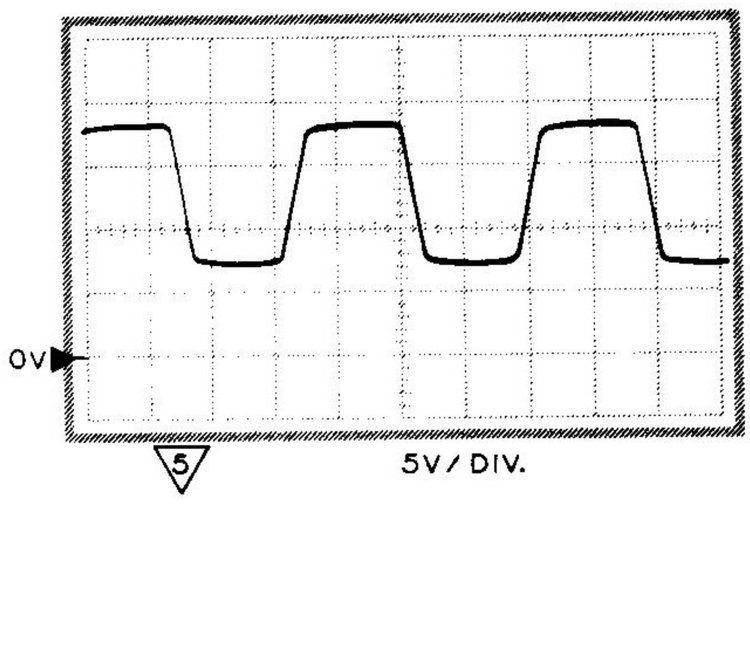

0V
2
0.5V / DIV.

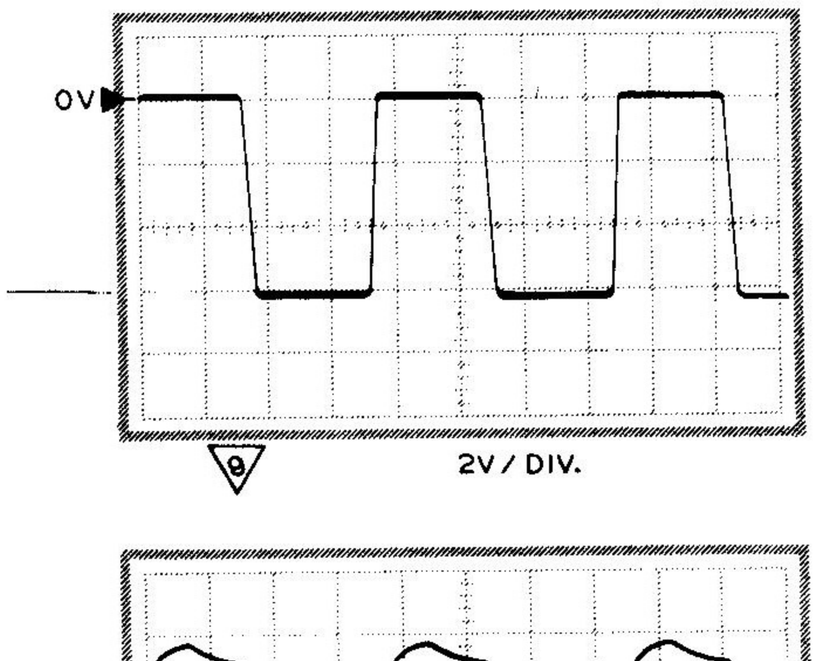

0V
3
2V / DIV.

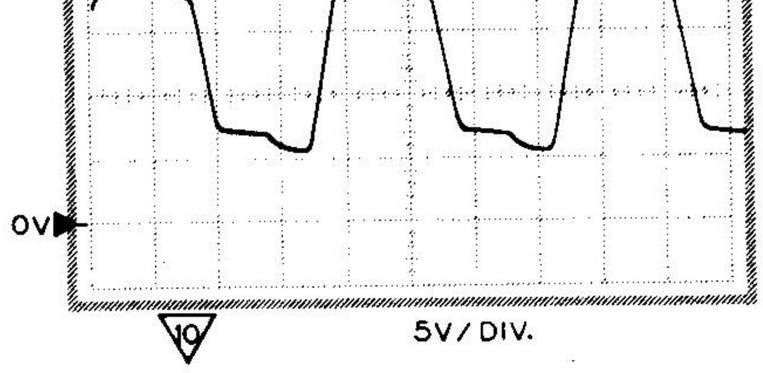

E12
C1
0.1µF
400V
A12
B78
C12
RED
INPUT
BLK
FUNCTION
SWITCH
SW5
WAFER 1
C2
1.5-20
R1
999K
1%
1/4W
.001
.003
.01
.03
.1
.3
1
3
10
30
100
300
METER
RANGE
SW4
WAFER 1
FUNCTION
SWITCH
SW5
WAFER 1
F78
C3
0.005µF
R2
1000
1%
1/4W
INPUT
VOLTAGE
ATTENUATOR
D78
MAX
MID
MIN
C4
2-20
R3
910K
LEVEL
SWITCH
SW6
C5
33
R4
91K
C6
225-700
R5
10K
10%
INPUT
REJECTION
AMPLIFIER
ATTENUATOR


0V
4
.01V / DIV.


0V
8
.5V / DIV.

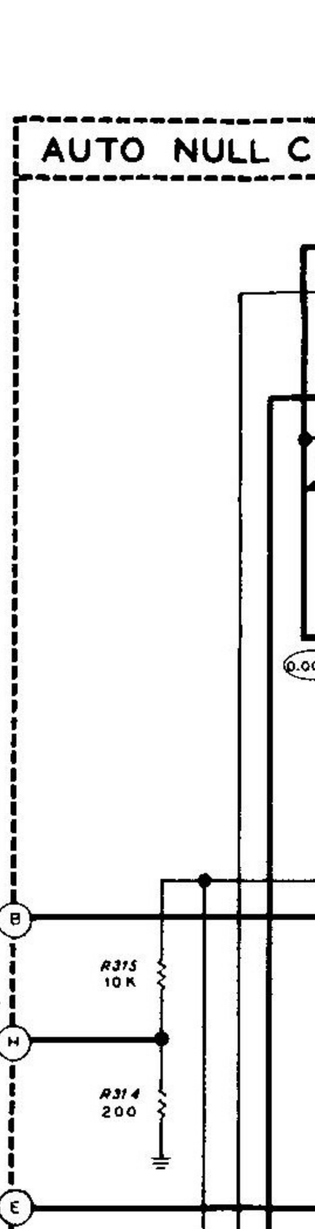

0V
5
5V / DIV.


0V
9
2V / DIV.


0V
10
5V / DIV.

0V
7
5V / DIV.

0V
11
2V / DIV.


AUTO NULL C
MODE
SWITCH
SW2
AUTO
WHT-ORG
MANUAL
WHT-YEL
R315
10K
R314
200
WHT-GRN
+24V
RED
R334
10
-24V
VIO
R335
10
C316
0.22MF
MODE
SWITCH
SW2
AUTO
WHT-VIO
MANUAL
WHT-BLK
R348
10K
R347
200
WHT-GRY

BRIDGE AND NULL AMPLIFIER CIRCUIT BOARDS

+24V ORG R → +24V SOURCE

IMPEDANCE CONVERTER

+24V

D101 56-56

C101 0.01μF

Q101 417-222

R103 100 (23.4V)

Q102 417-235

R102 100K

R104 10K (-0.09V)

C102 100μF

P

Z

R101 22M

D102 56-56

(-1.2V)

R105 2200

-24V

N

J12

WHT 8

K78 9

L

R32 5000

RED 10

LEVEL CONTROL

FUNCTION SWITCH SW5 WAFER 2

R33 330

R34 10K

C103 100μF

R106 240 (1.45V)

BRIDGE AMPLIFIER

+24V

C104 4.7μF

R107 8200

R108 20K

BIAS ADJ

Q103 417-94

(3.5V)

C105 30

R112 1000

(0.85V)

Q104 417-94

R114 6800 (15.5V)

Q105 417-94 (14.8V)

(2.9V)

C108 240

R113 2725 1% 1/4W

R109 120K

C106 200μF

R110 200

R111 3600

-24V

F GG

C109 500

R118 470

C110 56

R117 20K

-24V

-24V SOURCE

BLU J

R137 24

C107 100μF

G G

-24V SOURCE

H H

A A

+24V

B B

D D

R115 2700

V10

EE

BLK

CW R6 3000

COARSE BALANCE

H7

HH

R121 13K 1/4W

FINE BALANCE CW R7 100

AA WHT

R122 33K

R119 8200

K

R120 2725 1% 1/4W

CIRCUIT BOARD

A C

RESISTIVE CONTROL LOOP

R301 22K

R302 10K

4

4.75V

C301 33μF

BUFFER AMPL Q301 417-283

(0.005V)

(-0.61V)

R303 27K

C302 500μF

R305 12K

(13.45V)

Q302 417-283 ERROR AMPL

(12.2V)

Q303 417-283

5

(0.01V)

(-0.5V)

C303 0.01μF

(-0.5V)

R307 100

R308 100

R304 10K

C304 10μF

R309 12K

C305 50μF

R310 10K

C306 50μF

R311 10K

C307 0.01μF

R312 750K

6

(1.75V)

Q304 417-886

RESISTIVE DETECTOR

(-0.9V)

C308 2500μF

R313 4.7 10%

D301 56-26

R316 22K

R317 10K

(-0.44V)

Q305 417-283 AMPL

(19.7V)

(-1.2V)

D302 56-24

R318 2000

D303 56-24

(1.3V)

R319 36K

R321 380

R322 5600

Q306 417-283 LAMP DRIVER

(15.3V)

(0.7V)

R320 160

C331 0.01μF

R323 100K

C309 130

C310 0.22μF

(-0.5V)

1

C311 0.01μF

(12.95V)

R325 5100

Q3 417

(-1.1V)

R324 10K

REACTIVE CONTROL LOOP

R341 12K

R342 12K

(11.85V)

(13.2V)

Q310 417-283

Q311 417-283

ERROR AMPL

(-0.02V)

(-0.5V)

C330 0.01μF

(-0.5V)

R338 100

R339 100

R340 12K

(-0.01V)

R337 10K

C318 10μF

10

C319 50μF

R343 10K

R344 10K

C320 50μF

C321 0.01μF

R345 750K

11

(0.6V)

REACTIVE DETECTOR

Q312 417-886

(-1.5V)

R346 10

C322 2500μF

D304 56-26

(-0.45V)

R350 10K

(20V)

Q313 417-283 AMPL

R349 22K

(-1.03V)

D305 56-24

R351 2000

D306 56-24

(1.3V)

R352 38K

R354 380

(17.1V)

Q314 417-283 LAMP DRIVER

(0.75V)

R353 160

C323 2.2μF

R353 8200

R356 18K

R357 2200

C324 33μF

R358 10K

R359 120

REJECTION AMPLIFIER

OPTICAL ISOLATOR CIRCUIT BOARD

WIEN BRIDGE CIRCUIT

NULL AM

FREQUENCY RANGE SWITCH SW3

FUNCTION SWITCH SW5 WAFER 2

FREQUENCY RANGE SWITCH SW3 WAFER 2

FUNCTION SWITCH SW5 WAFER 2

BIAS ADJ

Q106 417-878

Q107 417-94

BUFFER AMPL 307 417-283

REF AMPL

Q308 417-93

Q309 417-93

90° PHASE LAG AMPL

Q315 417-283

Q316 417-283

Q317 417-93

Q318 417-93

REF AMPL

+24V SOURCE

-24V SOURCE

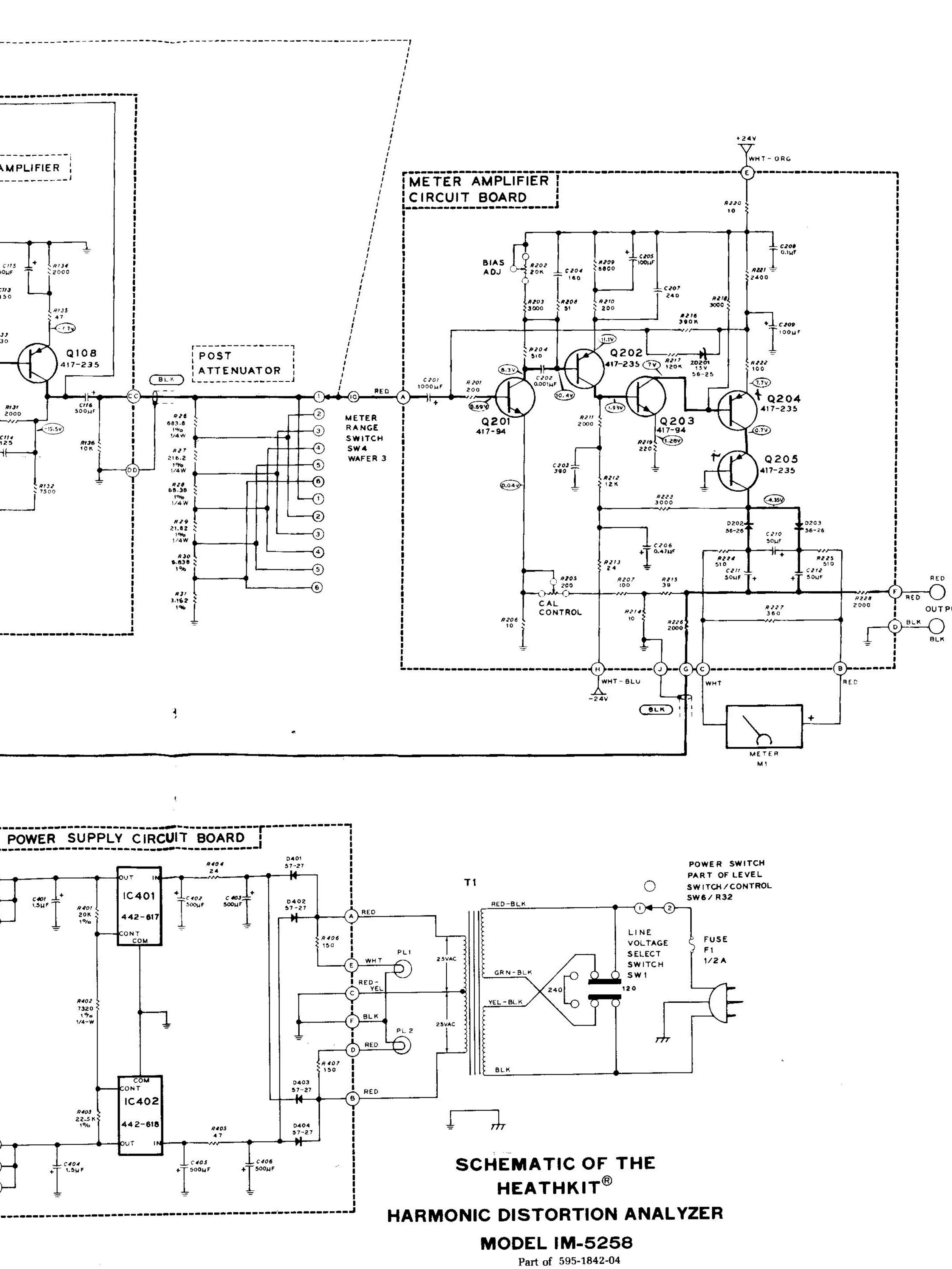
WAFER 4

FREQUENCY RANGE SWITCH SW3

WAFER 5

NOTE:

1. ALL RESISTORS 1/2-WATT, 5% UN
RESISTOR VALUES ARE IN OHMS
2. ALL CAPACITOR VALUES ARE IN
MARKED OTHERWISE.
3. ◯ THIS SYMBOL AROUND A L
CIRCUIT BOARD WIRE CONNECT
BRIDGE AND NULL AMPLIFIER C
FUNCTION AS A SINGLE CIRCUI
REPRESENTED IN THIS MANNER
4. ⬭ THIS SYMBOL INDICATES
MEASUREMENT TO GROUND, (±10
WITH 1 MEGOHM (OR GREATER)
CIRCUIT CONDITIONS INCLUDE
1. NORMAL LINE VOLTAGE
2. INPUT SHORTED.
3. MODE SWITCH IN MANU
4. LEVEL SWITCH IN MIN.
5. LEVEL CONTROL FULLY
(NOT OFF).
6. METER RANGE SWITCH
7. FUNCTION SWITCH IN S



SCHEMATIC OF THE HEATHKIT®
HARMONIC DISTORTION ANALYZER
MODEL IM-5258

Part of 595-1842-04

UNLESS MARKED OTHERWISE.
MS (K=1000, M=1,000,000).

IN PICOFARADS UNLESS

A LETTER INDICATES A
CTION. NOTE: THE
CIRCUIT BOARDS
UIT, AND THEY ARE
ER IN THE SCHEMATIC.

S A DC VOLTAGE
10%) USING A VOLTMETER
) INPUT IMPEDANCE.
DE:
GE OF 120VAC (240VAC).

NUAL.
N.
Y COUNTERCLOCKWISE

H IN SET LEVEL.
SET LEVEL.

5. ▽ THIS SYMBOL INDICATES A WAVEFORM TEST POINT ON THE AUTO NULL CIRCUIT BOARD, AND IS USED TO CHECK THE AUTO NULL CIRCUITS. CIRCUIT CONDITIONS INCLUDE:
   1. NOMINAL LINE VOLTAGE OF 120VAC (240VAC).
   2. 1000HZ SIGNAL APPLIED TO THE INPUT.
   3. CIRCUIT PREVIOUSLY NULLED IN THE MANUAL MODE (INSTRUMENT FUNCTIONS IN MANUAL).
   4. MODE SWITCH IN MANUAL.
   5. METER RANGE SWITCH IN SET LEVEL.
   6. FUNCTION SWITCH IN SET LEVEL.
   7. FREQUENCY RANGE SWITCH IN 1k-10k.

6. ⏚ THIS SYMBOL INDICATES A POWER SUPPLY VOLTAGE SOURCE.

7. ⏚ THIS SYMBOL INDICATES CIRCUIT GROUND.

8. ⏚ THIS SYMBOL INDICATES EARTH (CHASSIS) GROUND.

9. ALL OF THE SWITCHES ARE POSITIONED ON THE SCHEMATIC AS FOLLOWS:
   SW1 (120/240) - 120
   SW2 (MODE) - MANUAL
   SW3 (FREQUENCY RANGE) - 5-10
   SW4 (METER RANGE) - .001 VOLT
   SW5 (FUNCTION) - VOLTMETER
   SW6/R32 (LEVEL) - MAX/POWER ON

10. CIRCUIT COMPONENT NUMBERS ARE IN THE FOLLOWING GROUPS:
    1 - 99 CHASSIS MOUNTED PARTS.
    100 - 199 BRIDGE AND NULL AMPLIFIER CIRCUIT BOARD PARTS.
    200 - 299 METER AMPLIFIER CIRCUIT BOARD PARTS.
    300 - 399 AUTO NULL AMPLIFIER CIRCUIT BOARD PARTS.
    400 - 499 POWER SUPPLY CIRCUIT BOARD PARTS.
    500 - 599 OPTICAL ISOLATOR CIRCUIT BOARD PARTS.

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